Vanadium Fact Sheet

Common Names: Vanadium, Vanadyl Sulfate, Vanadate, vanadium salts or vandate compounds.

Historical Perspective: Vanadium is a naturally occurring metallic element, number 23 on the Periodic Table. It has not yet been determined if vanadium is essential in human nutrition. Estimates of need for the human body range from 10 to 30 micrograms per day, while the average American diet provides between 10 and 60 micrograms per day from foods such as shellfish, mushrooms, parsley, dill seed and wine.

Common Uses: At this time, vanadium does not have any prescribed use in medicine or disease prevention. As a dietary supplement it has been marketed to improve blood sugar control, and increase muscular strength as well as osteoporosis treatment. Because vanadium has shown to be deposited in the bone of mice, some have suggested that it may be helpful for osteoporosis. Both experimental and clinical trials indicate that vanadium has significant insulin-mimetic properties in pharmacological doses. Bodybuilders take vanadium in the hopes that it will increase muscle bulk and strength due to insulin's anabolic role.

Investigational Uses: Reports that vanadium promotes muscle-mass development are refuted by research. Results for use in persons with diabetes have shown good results, particularly in type 2 diabetes. Six type 2 diabetic subjects treated with 100 milligrams of vandayl sulfate daily for four weeks had significant reductions in fasting plasma glucose; beneficial effects of insulin sensitivity persisted for up to four weeks after vanadium treatment ended (PDR.) New vanadium compounds have been developed that are reportedly less toxic and more effective. Animal studies are underway and clinical trials are planned.

Potential Side Effects: Excess vanadium consumption is associated with a green tongue (Sarubin.) Metals accumulating in bone are not a known source of strength for the bone or treatment for osteoporosis. Adverse events have been reported with vanadium use to the FDA and include Grand mal seizure, elevated and "roller coaster" blood glucose levels, and death.

Food-Drug Interactions: None noted.

Contraindications to use: Vanadium can also contribute to lower blood sugar and therefore blood sugars should be carefully monitored for someone who takes vanadium with an oral hypoglycemic agent or insulin.

Research Data on Safety and Efficacy: Vanadium can be a relatively toxic element (Sarubin.) Animal studies suggest that intake exceeding 10 mg elemental vanadium leads to toxicological effects. These studies show that toxicity has induced hematological and biochemical changes; reproductive and developmental toxicity, excess vanadium build up in bone, kidney and liver; and pro-oxidative effects on glutathione, ascorbic acid, lipids and NADPH.

Bottom-Line & alternative treatment: To date, the little that is known about vanadium's effect on insulin is from animal studies primarily. Dosages to affect change in blood sugar levels were administered at pharmacological levels and were conducted under medical supervision. Vanadium demonstrates the potential for an insulin alternative in the future, but its use is highly discouraged at this time.

Improvements in insulin sensitivity without the use of medication are best achieved through daily physical activity, which will sensitive the muscles to glucose absorption.

Resources:

1. http://vm.cfsan.fda.gov The Food and Drug Administration's Center for Food Safety and Applied Nutrition.
2. The Health Professional's Guide to Popular Dietary Supplements. Sarubin, Allison. The American Dietetic Association, 2000.
3. PDR for Nutritional Supplements. Physician's Desk Reference, 2001.
4. www.tnp.com The Natural Pharmacist.